standards, however, Northern Telecom urges the Commission to utilize a negotiated rulemaking procedure.

E-911 services continue to grow in importance in the United States. Northern Telecom believes that the goal of enhancing E-911 services as technology evolves is a laudable one that is shared universally. To the extent that there is any disagreement as to how best to achieve that goal, Northern Telecom suggests a negotiated rulemaking as the best way to develop a consensus in a timely fashion.

By bringing together all of the interested parties, including a representative of the Commission, solutions to any outstanding problems can be developed. Northern Telecom believes that such a process will be more effective than simply setting a delayed time period for implementing changes without specifying how that is to occur, since the usual industry standard setting processes may not include representation from all of the affected interest groups. In addition, the negotiated rulemaking process can address all of the aspects of the problems, rather than dealing with particular issues in isolation. As discussed in the previous sections, the Commission's proposals impact significantly more than just PBXs and wireless systems.

The statutory provisions for use of a negotiated rulemaking procedure allow the agency to convene a negotiated rulemaking committee if the following criteria are met:

a. there is a need for the rules to be developed;

b. there are a limited number of identifiable interests that will be significantly affected by the rules;

c. there is a reasonable likelihood that a committee can be convened with a balanced representation of persons who (1) can adequately represent the identifiable interests and (2) are willing to negotiate in good faith to reach a consensus on the proposed rules;

d. there is a reasonable likelihood that a committee will reach a consensus on the proposed rules within a fixed period of time; and

e. the negotiated rulemaking procedure will not unreasonably delay the notice of proposed rulemaking and the issuance of final rules.[11/]

Northern Telecom believes that each of these standards is met in this case.

As evidenced by the preliminary conclusions in the initial NPRM, there is a clear need for federal rules governing E-911 services to ensure compatibility of new technology. There are also a number of interest groups potentially impacted by such rules, but a manageable number of representatives could be found to address these issues. The participation by manufacturers, services providers and PSAPs (and their representatives) in the industry activities that led the Commission to issue the E-911 NPRM demonstrates the importance which these groups attach to these issues. Thus, Northern Telecom also believes that a representative group of all of the affected interests could be expected to negotiate in good faith.

In light of the importance of these issues, as well as the general agreement on the goals, Northern Telecom anticipates

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11/ 5 U.S.C. § 583. In addition, the agency must find that it has adequate resources which it will dedicate to this process, and that the agency is committed to using a consensus as the basis for the proposed rules.

that such a negotiated rulemaking committee is likely to reach a consensus of proposed rules for achieving those goals. Unlike some of the Commission's earlier negotiated rulemakings where consensus was not reached, this situation does not involve mutual exclusivity or multiple parties competing for a scarce resource. Moreover, none of the interest groups have any incentive to delay resolution of these issues. Thus, Northern Telecom believes that the proposed rules could be developed in a timely manner. Finally, the use of a negotiated rulemaking should speed the ultimate development of the rules, because the process would be conducive to rapid progress in resolving the outstanding issues. Thus, Northern Telecom urges the Commission to dedicate the resources to conduct a negotiated rulemaking.

In sum, Northern Telecom suggests a phased implementation of rules to govern compatibility of new technologies with E-911 services, with some issues addressed promptly by the Commission and other issues referred to a negotiated rulemaking committee (or appropriate standards setting body). This approach will allow some benefits to be achieved in the near term, while also allowing the development of rules that will ensure that practical, viable and efficient solutions are developed for the more complicated issues. In Sections V. and VI. below, Northern Telecom specifies the steps that should be taken in the near term and the issues that must be resolved in the longer term.

IV. THE COMMISSION SHOULD ESTABLISH UNIFORM, NATIONWIDE STANDARDS

Northern Telecom supports the Commission's proposals to establish uniform, nationwide standards for dispersed private telephone systems and wireless systems to help attain nationwide compatibility.[12/] Northern Telecom believes that the public interest will be advanced by the creation of federal standards, even though some preemption of inconsistent state or local standards may result.[13/]

A number of state and local governments have begun to address the concerns that are the subject of this proceeding through laws, regulations or ordinances. Unfortunately, the requirements have not been uniform. Thus, businesses and equipment manufacturers are beginning to face a patchwork quilt of state and local requirements.

A uniform set of E-911 requirements imposed by the Commission, along with national technical standards, would benefit manufacturers because they could produce equipment that

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12/ Nationwide availability of E-911 services is also dependent on deployment of PSAPs and E-911 capabilities in the telephone networks. At present, some 15% of the country's telephone systems only have basic 911 service, and roughly 17% have no 911 service at all. The Commission may also wish to consider initiating studies to determine the reasons underlying the lack of E-911 deployment in these areas, and whether it can create incentives for more widespread deployment.

13/ In this situation, Northern Telecom believes that the Commission has the authority to preempt inconsistent state or local requirements. See e.g., Louisiana Public Service Commission v. FCC, 476 U.S. 355, 375 at n. 4 (1986); North Carolina Utilities Commission v. FCC, 552 F.2d 1036, 1045 (4th Cir.), cert. denied, 434 U.S. 874 (1977).

could be marketed throughout the country. Subscribers would also benefit, because multiple sources of supply would likely be available. Costs should be lower, because there would not be a need to customize equipment for a particular locale. Moreover, telephone equipment would not have to be re-configured if it was moved to a different jurisdiction.

Even telephone systems like PBXs that are thought of as "fixed" are relocated from time to time as businesses move or expand. There is also a vigorous market for used or refurbished multiline business telephone equipment. Thus, the Commission can expect multiline systems such as PBXs to be moved from one city or state to another. In addition, there are cases in which a single PBX serves telephones located in multiple jurisdictions. Uniform national standards would ensure interoperability and compatibility of PBXs with E-911 services throughout the country.

In the case of mobile services, the need for uniform national standards is even greater. As evidenced by the experiences with cellular to date, subscribers value highly the ability to "roam" and continue to use their handsets outside of their home territory. The desire for roaming will likely increase with the deployment of PCS. In order to ensure that a subscriber will be able to access E-911 services wherever cellular or PCS is offered, it will be necessary to establish uniform national standards.

Moreover, to the extent that there are nationwide standards, equipment will not need to be configured to meet a

patchwork of different requirements.[14/] Such uniformity will lead to lower costs for manufacturers, which in turn will lead to lower prices for consumers. The Commission can readily accomplish the creation of nationwide standards, whereas relying on all of the state or local governments to implement identical requirements would likely prove difficult and time consuming.

V. COMPATIBILITY OF DISPERSED PRIVATE TELEPHONE SYSTEMS WITH E-911 SERVICES AND NETWORKS

A. Background

The E-911 NPRM discusses the need for new rules to address the concern that at present, telephone calls to 911 from a PBX may not provide the necessary information that will allow the emergency services provider automatically to view the precise location of the calling phone line on their PSAP screen. The ANI provided by the PBX will typically translate to the billing address of the PBX. This information may not be helpful to the emergency service provider because the billing address may not correspond to the physical location. Even where the street address of the PBX is the same as the billing address, it may also be the case that for a large building or a PBX serving multiple buildings (in a campus environment, for example), the

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14/ For example, a consistent requirement with respect to accuracy will eliminate the need to include adjunct equipment (such as GPS receivers) in handsets to provide a more precise determination of location for jurisdictions imposing stricter limits.

ANI will not be helpful in determining the precise location of the telephone handset that is calling 911.

In order to maximize the utility of E-911 services, the Commission has proposed specific rules that would govern dispersed private telephone systems, including PBXs. The proposed rules address, inter alia, availability of service from all stations, attendant notification, Automatic Location Identification ("ALI") database update requirements, the information to be passed from the PBX to the E-911 network, network interface standards, LEC obligations and labelling requirements.

Northern Telecom agrees with the general thrust of the proposed rules, which are designed to ensure compatibility with E-911 services. Northern Telecom believes, however, that some refinements are necessary in order to make sure that the goals are achieved, but without imposing unnecessary or excessive costs. Northern Telecom urges the Commission to alter the rules in several respects. Following this general discussion is a more detailed description of Northern Telecom's suggested changes to the proposals in the E-911 NPRM, including specific comments on the text of the proposed rules which was set forth in Appendix C of the E-911 NPRM.

As indicated earlier, the issues may be more complicated than supposed in the E-911 NPRM. The Commission should recognize that there are different sizes of dispersed private telephone systems, including PBXs that serve small businesses with a handful of employees concentrated in a small

area, to PBXs capable of supporting 120,000 lines over a wide campus environment. Another category of telephone systems serving businesses are key telephone systems, which range in size from a few lines to upwards of fifty or more lines.[15/] Northern Telecom believes that with respect to the proposed obligations, it may be appropriate to reduce some of the burdens imposed on smaller telephone systems by the rules.

Northern Telecom also urges the Commission to cross reference the appropriate industry standards, rather than codifying the current standards into the Rules. Such an approach will allow the requirements to evolve along with the standards, rather than requiring a rulemaking in order to update the standards. Northern Telecom also believes that the Rules should allow some technical flexibility in how the signalling and interconnections between PBXs and the E-911 networks will be provided.

Finally, Northern Telecom believes that some adjustments may need to be made to the labelling requirements for dispersed private telephone systems. The capabilities of the PBXs will largely be determined by the software that is installed in the equipment and how it is configured. Compliance with the obligations created by the new rules may thus be a function of

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15/ Key systems are generally distinguished by the need for the caller to first seize a trunk or outside line by pressing a button, which will provide a dial tone allowing them to call an outside number. There are also some hybrid telephone systems, which incorporate some features of both PBXs and key systems.

events subsequent to the equipment having left the manufacturer.[16/]

B. Suggested Modifications to the Proposed Rules

Northern Telecom urges the Commission to make the following changes to its proposed rules for dispersed private telephone systems. Some of these modifications are relatively minor, while others are more substantive.

Section 68.3 (definitions):

Northern Telecom suggests that the Commission use as the definition for "Enhanced 911" the following, which is derived from American National Standards Institute (ANSI) T1.411-1994.

> Enhanced 911: A system that establishes connections between Customer Interfaces (CI) and constituent Public Service Answering Points (PSAPs), provides Automatic Location Identification (ALI),[17/] and has provisions for selective routing.

Northern Telecom believes that the definition of Enhanced 911 should be consistent with the definition in ANSI Standard T.911-1994 prepared by the Alliance for Telecommunications Industry Solutions ("ATIS"). Northern Telecom's definition also

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16/ Northern Telecom also observes that even if the PBX or key system is compliant, E-911 services may not be available to the subscribers because of limitations in the local telephone network or the PSAP equipment. Thus, the absence of a "warning label" is no assurance that E-911 services will be available.

17/ Northern Telecom observes, however, that ANSI Standard T.411- 1994 incorrectly shows the acronym ALI as Automatic Location Information. As reflected in the proposed definition (and as defined by the National Emergency Number Association), ALI should stand for Automatic Location Identification.

more accurately reflects the way the service is structured for PBXs and key telephone sets.

Section 68.228: Enhanced 911 trunk and station number verification:

Northern Telecom believes that some less stringent requirements for installation should be imposed in the case of key telephone systems and small PBXs. Northern Telecom agrees that for all dispersed private telephone systems, initial installation testing and verification needs to be performed with the help of qualified telephone company personnel to ensure proper CPE - Central Office operation of the E-911 feature. However, Northern Telecom believes that proposed subsections (b), (c) and (d) of Section 68.228 contain verification requirements for installation, verification, supervision, etc. that are not realistic for most, if not all, small PBX and key telephone system CPE.

In many cases, the small PBX and key telephone systems ("KTS") are simple to install and require very little expertise. As an example, systems such as Norstar may soon be purchased in retail stores and installed by the owner or an electrical contractor. Thus, while Northern Telecom agrees that verification is necessary to ascertain the accuracy of information in the data bases, a simplified verification procedure should be applied in these circumstances. Northern Telecom believes that such a procedure could readily be adopted. For example, Northern Telecom understands that U S WEST sends verification information back to the PBX owner as a means of

checking the accuracy of the information contained in the data base.[18/]

Northern Telecom also believes that some clarification of subsection (e) is appropriate. The provision requires "verification of operation" when there is an addition or deletion of the information of data base entries. It is not clear if the intent of this provision is to test all E-911 functions after there has been any change in the CPE system (such as adding, moving or deleting telephones from service), or whether only the changed parameters need to be verified. In addition, the provision is unclear whether the verification will occur on a real time basis, or how much delay is tolerable in providing the updates and verification.

Particularly for larger PBXs, moves and changes occur on a ongoing basis. Even for smaller PBXs and key telephone systems, changes occur much more frequently than is the case with residential telephones. For the smaller PBXs and key telephone systems, Northern Telecom believes that some provision for batching or simplification of the verification and reporting requirements should be made for changes after the initial installation. For larger PBXs, if the Commission intends for there to be a real time reporting and verification process, then it will be necessary to develop the standards for interconnecting

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18/ U S WEST PS/ALI, Private Switch/Automatic Location Identification - User's Manual; U.S.West Document No. R-PSALI-USR1E-2.

the PBXs with the ALI databases.[19/] At any rate, some clarification of the obligations of larger PBX operators is necessary to establish the frequency and content of the updates and verifications.

Section 68.308: Signal power limitations:

Northern Telecom suggests that the Commission cross reference the industry standard power limits rather than codify those values. There are three such standards:

- EIA/TIA-464A-1989 "Private Branch Exchange (PBX) Switching Equipment for Voiceband Applications" (an updated version; 464-B-1995, will be released in mid-1995);
- ANSI standard T1.411-1994, "Interface Between Carriers and Customer Installations - Analog Voicegrade Enhanced 911 Switched Access using Network-Provided Reverse-Battery Signalling";
- ANSI T1.403- 1989, "Network-to-Customer Installation - DS 1 Metallic Interface" (an updated version will be available 1Q95).

Northern Telecom believes that referring to the industry standards rather than adopting specific values will prevent the limits from becoming obsolete in comparison with the latest ANSI and TIA standards. As a general proposition, Northern Telecom recommends that Part 68 should not specify technical requirements because of the evolving changes in to the CPE-to-Network interface standards.

19/ With respect to wireless PBXs, Northern Telecom believes that a negotiated rulemaking committee ought to address the many difficult issues of tracking the location of the handsets and providing that information to the emergency services providers.

Section 68.320: Enhanced 911 compatibility: technical standards:

Section 68.320(a): Trunk interface:

Northern Telecom believes that in this case also the Commission's Rules should cross reference the appropriate industry standards.[20/] As presently proposed, the trunk interface technical standards suggested by the Commission only specify E & M type 1 and type 3 signalling over two or four-wire trunks. Northern Telecom understands that the telephone companies prefer two-wire loop trunks as outlined in ANSI standard T1.411-1994 (or later updates). By cross referencing the appropriate industry developed standards, the Commission can avoid premature obsolescence of its Rules.

Section 68.320(b): Station Number Identification signaling:

Northern Telecom does not believe that the Commission should specify in its Rules the technology to be used. This is an appropriate issue for reference to a negotiated rulemaking committee or other industry standards setting body to resolve, with appropriate cross references in the Rules. Alternatively, if signalling methods are specified in the Rules, then the Commission ought to allow for flexibility and evolution by adding references allowing dual-tone multi-frequency ("DTMF") and ISDN PRI/BRI signalling for CLID to the Enhanced 911 tandem switch.

20/ The trunk interface standards can be found in the same sources listed by Northern Telecom for Section 68.308, supra.

The proposed Rules in the E-911 NPRM do not allow for forward-looking technologies, such as ISDN and AIN.

The Commission should allow (if not encourage) the use of ISDN Primary or Basic Rate signalling, which would permit the future evolution of more intelligent signalling. The use of central automated message accounting ("CAMA") ANI signalling is probably unavoidable in the short term as a temporary "fix", but Northern Telecom does not believe that such a signalling method should be relied on for the longer term. Northern Telecom believes that it would be wasteful to attempt to enhance an already outdated technology.

The proposed Rule only specifies multi-frequency ("MF") signalling for station number identification ("SNI"). However, systems such as Northern Telecom's Norstar use DTMF signalling for SNI, which is accommodated in the current industry publication addressing signalling protocols (TIA TSB-103). In addition, more advanced technologies should be included (such as signalling using ISDN PRI/BRI). Cross referencing the appropriate industry standards would allow the evolution of signalling technology to be applicable to the E-911 interconnections.

Northern Telecom believes that the current technology has drawbacks that will limit its utility as E-911 services and the telephone network evolve. CAMA is slow, and has no significant evolution potential (beyond a possible expansion to 10 digits). In addition, many customers will be able to reduce

their trunking costs by combining the required one or two E-911 trunks into unused channels of a Primary Rate Interface.[21/]

Northern Telecom also believes that DTMF protocol is often more suited to key telephone systems, since they have to support DTMF in any case, and this would save having to use different electrical signals. Thus, allowing such flexibility would ease the implementation of E-911 compatibility for these smaller multiline business telephone systems.

Section 68.320(c): Operability:

The Commission proposes that access to 911 be provided without the need to dial any additional digits, and regardless of blocking. Northern Telecom supports such a requirement. However, the proposed rule also indicates that access shall be provided if the dialer uses additional digits preceding 911. Absent significant development work, it is not possible to provide E-911 service over dedicated E-911 trunks if the caller uses an access code, such as "9" plus the digits 911. If the caller dials 9+911, a regular trunk group will be accessed, and this may be a regular analog route without ANI.

Northern Telecom believes that the rules should specify access by dialing 911 only, without an access code. Customer education should be relied on to inform users what number to dial (or not dial). Alternatively, the Commission could allow access through dialing additional preceding numbers, but not require the

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21/ Of course, it will also be necessary to ensure that local tariff arrangements do not discourage such a configuration.

passing of the ANI or SNI in those circumstances. In addition, the Commission must make allowances for key telephone systems, where 911 access is obtained by selecting a Central Office trunk key (outside line) and dialing 911.

Section 68.320(d): Equipment levels:

Northern Telecom believes that the proposed Rule should be modified to take into account the vastly different sizes of private dispersed telephone systems. Differing requirements for dedicated trunks ought to apply to small and large PBX and KTS systems. Northern Telecom believes that a negotiated rulemaking committee would be the appropriate forum for resolving where the cut-off for the different categories should be set, taking into account the burdens imposed by a need for dedicated trunks relative to the size of the telephone system.[22/]

The requirement for one or more dedicated E-911 trunks specified by the proposed Rule are not realistic for small PBX and key telephone system. A Norstar, Meridian 1 Option 11, or Option 21 system may have only a few trunks, and requiring a dedicated E-911 trunk will put a disproportionate cost burden on these small business customers. In addition, the constrained capacity of some smaller systems makes it difficult (if not

22/ Northern Telecom anticipates development of a consensus rule proposal based on floor area, multiple floors, line size, or some other similar criteria.

impossible) to dedicate a portion of the limited capacity for an E-911 trunk that will rarely be used.[23/]

Section 68.320(e): Attendant Notification:

Northern Telecom believes that some clarification of this provision is necessary. Attendant notification is not practical for key telephone systems and small PBXs. There should be no requirement for 24-hour staffing of any guard/attendant position. However, the E-911 functionality must operate in the absence of staff.

The proposed rule seems to require attendant notification only if an attendant is present. Northern Telecom requests that the Commission confirm this interpretation, so that no obligation for attendant monitoring will be required of small systems. Such an obligation would create an unacceptable cost overhead for small installations.

Section 68.320(f): Information Requirements:

There is some ambiguity as to what information must be provided by a PBX to the PSAP. Northern Telecom believes that the Commission should clarify that the delivery of the caller's station number identification, caller location identification, and call back number do not each have to be sent from the PBX or

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23/ By way of example, Northern Telecom sells a Norstar Compact key telephone system, which has the capacity for six trunks (and sixteen stations). If a customer is required to install a dedicated E-911 trunk, then 16% of the system capacity will be occupied by a line that is seldom used.

key system to the PSAP on every E-911 call. Northern Telecom believes that provision of the SNI with each call should suffice.

Under the current E-911 configuration (which is expected to continue), if the identifying number (SNI) is provided to the PSAP with each call, then a data base query will provide the PSAP with the additional required information.[24/] Northern Telecom requests that the Commission confirm that provision of the SNI to the PSAP with each call, along with the other information on location and call back number having already been provided to the PSAP agent responsible for the database, meets the requirements of this subsection.

Section 68.320(g): Labelling Requirements:

Northern Telecom objects to the proposed requirement that "non-compliant" PBX equipment be labelled. Northern Telecom believes that to label "non-compliant" equipment as suggested will be meaningless at best, and confusing and inaccurate at worst. The responsibility for labelling individual telephones or otherwise educating expected users should be the responsibility of the CPE owner.

The compliance of PBX installations will be a function of the software used and the configuration of the system. The hardware components are usually standard, and are supplied to

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24/ Under current technology, it would not be practical to require the PBX to transmit all of the information along with the call because CAMA signalling provides a limited amount of capacity. Provision of the SNI by the PBX, combined with a data base query by the PSAP, will result in the PSAP obtaining all of the relevant information, even though not all of the information was provided by the PBX.

"compliant" and "non-compliant" users interchangeably. Thus, the warning labels for the equipment will be meaningless. On the other hand, Northern Telecom would not object to requiring manufacturers to label software shipments or otherwise clearly indicate if the software will allow the telephone equipment to meet the E-911 requirement.

It would be unfair to impose an obligation on the manufacturer to label the equipment, since "compliance" may depend on factors after the equipment has left the factory. In addition to the importance of the software for determining "compliance," the original manufacturer does not have any control over the CPE after it is removed from the original customer's location. The equipment may have been re-installed after being purchased on the "gray" market or otherwise reconfigured. Thus, Northern Telecom suggests that the Commission delete this proposed subsection.

C. Other General Comments

Some refinement of the proposed rules is necessary to take into account differences in the technology that has been deployed as at it will evolve. Although not necessarily addressed specifically in the proposed Rules set forth in Appendix C of the E-911 NPRM, Northern Telecom believes that the Commission should seek to consider these issues.

Size

The Commission must not impose unreasonable E-911 compatibility requirements on small customer premise telephone systems, as these requirements could easily cost more to install and maintain than the key telephone system or small PBX they would serve. The thresholds below which the Rules will apply should be the subject of a negotiated rulemaking, and possibly referred to the appropriate industry standards organization (e.g., TIA committee TR-41.1.9).

By way of example, dedicated 911 trunks should only be required for systems with more than a threshold number of trunks. Failure to take size into account could create unreasonable cost overhead on small businesses and cut into the limited capacity of some smaller telephone systems.

Similarly, the negotiated rulemaking committee should examine the possibility that generating and sending of individual station ANI should not be required on systems that are geographically compact (say less than 5000 square feet of floor space) and have no off-site extensions (e.g., OPX lines). The negotiated rulemaking committee should also review the requirement for small telephone systems that location information be generated, or an ALI database be updated on a real time basis.

Northern Telecom believes that such requirements are not really necessary where the space is small and contiguous. If the emergency service provider is provided information on the location of the business, it would not also need to know the

specific position of the calling handset to obtain a reasonably accurate location where help is needed.

In addition, small installations are likely to have unskilled installers and no permanent maintainers, and the chances of successfully keeping track of station ANI and location information are reduced. Key systems owners are typically small businesses that are continually being forced to reduce their operating costs. The trend is for these key telephone systems to be sold as a commodity, and installed by the owner.

It would not necessarily be the case that all of the obligations would be reduced or eliminated for small systems. Northern Telecom agrees that the requirements to dial "911" without access codes, and from fully restricted stations, and also to conference a local security guard or attendant, are valid requirements that are irrespective of the size of the PBX or key system. Northern Telecom believes that with the assistance of a negotiated rulemaking committee, the Commission can fashion requirements appropriate for the size and sophistication of the customer, balancing the costs and benefits of the various obligations.

911 Routes

For the PBXs with a dedicated 911 trunk, no PBX should be required to have more than one 911 route, even if some of the extensions are in the jurisdiction of a different PSAP. Northern Telecom believes that the function of routing should occur in the

E-911 network, not in a PBX. A public Selective Router should be able to route 911 calls based on the ANI supplied, and placing that functionality in all PBXs when it would only be applicable for a minority of installations would be uneconomic.

In addition, it is expensive even for large PBX's to retain a dedicated 911 route that is rarely used. There should be no requirement to double or treble this cost, often for small numbers of telephones, particularly since the function of transferring the call to the nearest PSAP can be accomplished by the E-911 Selective Router across jurisdictional boundaries.

Callback Issues

One of the desired features sought by the emergency services providers is the capability to call back the caller in case he or she disconnects. The Commission must recognize that the rich variety of features available within PBX's may preclude a callback (to a correct number) from terminating on that telephone. Examples include Call Forwarding, Make Set Busy, etc. Moreover, sets that are merely busy (e.g. off-hook) will also not get called.[25/] Similarly, many non-DID stations can only be reached by calling the main number and having an attendant (manually or automatically) put the call through. As another

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25/ The returning call from the PSAP will not be identifiable as a returning 911 call, so nothing can be done in the PBX to override the features selected by the user. It would take a major development effort to be able to identify such a callback as a 911 call, and Northern Telecom does not believe that such efforts are justified.

example of a potential problem caused by advanced PBX features, when a wireless portable phone operating with a PBX has the same extension number as a desk phone, both stations will ring, and either can be answered. Northern Telecom does not believe that there is any practical means to overcome these various limitations.

Rather than focus on providing callback capability (helpful though that is), a much more satisfactory approach would be to prevent the caller from disconnecting in the first place. This would allow a guaranteed connection back to the caller. There exists a feature in many environments called (among other things) "Called Party Disconnect Control". This allows only the PSAP to disconnect an E-911 call; if the caller were to hang up, the PSAP would be able to re-ring, over the original connection.

Unfortunately, the feature is not in widespread use, for two reasons:

- A number of PBX's do not offer the capability.
- The ISDN PRI or SS7 protocols do not presently support this function.

Given the substantial benefits that this feature could offer in an E-911 environment, we recommend that the Commission (and/or the negotiated rulemaking committee) consider such a feature as a longer term solution in lieu of callback requirements in excess of today's capabilities. The timing would have to be geared to the time needed to put the necessary ISDN standards in place, and ANSI Committee T1S1 would probably need to be involved.

Tariffs/Cost Issues

Northern Telecom believes the Commission should view as a goal for E-911 avoiding excessive costs being imposed on multiline subscribers. To the extent that the Commission imposes a requirement of dedicated 911 trunks, one option would be to have separate rates charged by the telephone companies for such E-911 trunks. Under this scenario, the monthly recurring cost of a dedicated E-911 trunk to the PBX user would be limited to the cost of its provision, rather than following normal practices in many jurisdictions where business rates are used to subsidize residential rates.[26/] Avoiding excessive rates would also help incent PBX users to provision adequate E-911 trunks.

D. Wireless PBXs

One new technology that is not directly addressed in the E-911 NPRM is wireless PBXs. These devices are beginning to be deployed in the United States, and are expected to grow in importance with the advent of unlicensed PCS offerings. The NPRM does not explicitly discuss issues uniquely related to wireless portable phones connected behind a PBX and used within the building or on a campus. Northern Telecom believes that this

26/ Moreover, these trunks will not have the normal incoming or outgoing traffic on them, so that the cost to the telephone company of providing or maintaining them could be lower.

issue should be explored further as part of a negotiated rulemaking.[27/]

Northern Telecom assumes that the Commission may want to apply the wireless guidelines from the E-911 NPRM, although these services are unlikely to be commercial mobile radio services and thus might fall outside of the class of wireless services subject to the new rules. There are, moreover, some concerns with any suggestion of requiring wireless PBXs to meet the E-911 NPRM's requirements for wireless services, which are intended to address the outdoors cellular-type application.

Given that PBX wireless cells are typically much smaller than cellular outdoor cells, Northern Telecom suggests that it may be sufficient that the base station location be provided as the indication of the caller's location. The range of a typical base station is small enough (typically 50-75 meters) that location of the base station would allow the caller to be found. In addition, some of the location technologies available to cellular phones (e.g., GPS) would not work within a building.

To require better resolution would likely drive up the cost of Wireless PBX to the point of seriously delaying their introduction. Moreover, having access to the E-911 network is far more important than providing information on the caller's location (since the caller can typically provide that information directly). The benefits from additional mobile access to E-911

27/ In addition, there may be other configurations where an adjunct, such as a key system, is used "behind" a PBX. There may be issues raised by such devices that should also be addressed by a negotiated rulemaking committee.